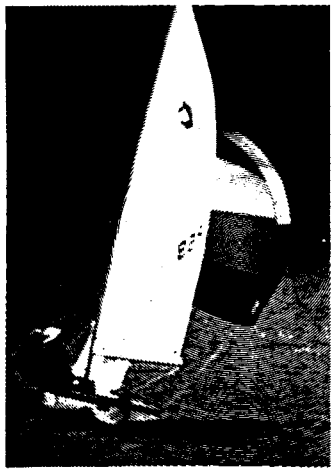
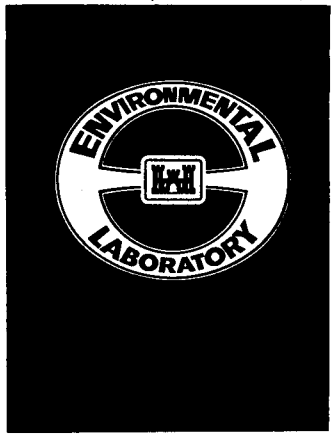
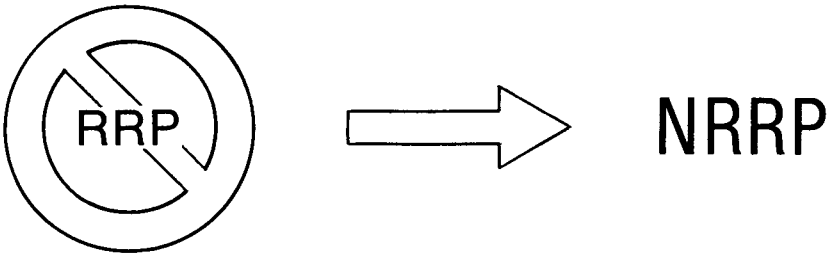
US Army Corps of Engineers
Waterways Experiment Station





RECNOTES
NATURAL RESOURCES RESEARCH PROGRAM

VOL R-84-2 INFORMATION EXCHANGE BULLETIN MAR 1984



The Recreation Research Program (RRP) name has been changed to the Natural Resources Research Program (NRRP). The objective of the NRRP will remain essentially the same as the RRP: to expand knowledge and understanding of problems encountered in order to improve the effectiveness and efficiency of the Corps in managing natural resources while providing recreation opportunities at its water resources development projects.

YOUR ROLE IN THE NATURAL RESOURCES RESEARCH PROGRAM

R. K. Tillman
Program Management, EL

INPUT TO PROGRAM

Corps recreation/natural resources personnel often ask how their problems can be solved by research using the Natural Resources Research Program (NRRP). Other persons are interested in providing comments or assistance to on-going NRRP work units. We have learned, however, that many Corps personnel do not know how, when, or where they can provide this much needed input. This article describes how *you*, the user of NRRP products, can provide us with your input. We avidly solicit your thoughts, ideas, views, attitudes, and perceptions on all NRRP research. Contact with NRRP product users who are knowledgeable of on-going research activities will allow us to provide better products for the Corps.

You can provide input into the NRRP by:

- Submitting mission problem statements to DAEN-CWR-W or to your Division/District Civil Works R&D point of contact.
- Providing input on proposed research to Division or District NRRP Points of Contact, especially prior to annual program reviews.
- Providing comments at any time to the NRRP Manager.
- Providing support to data collection for NRRP activities.
- Evaluating and commenting on the effectiveness of NRRP products.

WORK UNIT PROCESS

Figure 1 identifies the ten steps necessary to solve a natural resources/recreation problem by using the NRRP. More importantly, Figure 1 identifies where *you* can provide input into the NRRP.

Step 1: Mission Problem Statement

All NRRP research topics address one or more mission problems. If you feel that you have a problem that may be solved through research and that the solution may have Corps-wide application, submit a mission problem statement that simply describes the problem, tells why the solution is important, and explains how research could help. Any Corps employee may submit a mission problem statement at any time. (For assistance in preparing mission problem statements, refer to Engineer Regulation 70-2-6, "Identification of Civil Works Research Needs," 5 Jan 82.) Specific problems that occur at a Division, District, or project can be researched by the NRRP on a mission support (reimbursable cost) basis.

Step 2: Mission Problem Statements Rated

Once a year the NRRP technical monitor rates all NRRP mission problem statements as having either high, medium, or low Corps-wide importance.

Step 3: Proposed Work Units

After the Technical Monitor rates the mission problem statements, the NRRP Manager proposes research work units to solve the various mission problems. Documentation for the proposed work units is distributed to Division Points of Contact for R&D and NRRP for evaluation prior to the Program Review.

Step 4: Program Review

During the third quarter of each fiscal year, the Directorate of Research and Development (DRD) conducts a Program Review, which is attended by:

- Representatives of DRD
- Representatives of Civil Works Directorate
- Technical Monitor
- NRRP Management
- NRRP Division Points of Contact
- Other interested Corps personnel.

At the Program Review, NRRP Division Points of Contact (Table 1) discuss the proposed work units and recommend work unit priorities to the Technical Monitor. Input from Districts and projects to Division Points of Contact plays an important role

Table 1
Natural Resources Research Program Contacts

Technical Monitor		
OCE	Nancy Tessaro/DAEN-CWO-R	202-272-0247
OCE	Alex Otto (Alternate)/DAEN-CWP-P	202-272-0131
Program Management		
WES	A. J. Anderson/WESEP-R	601-634-3657
WES	Russ Tillman/WESEP-R	601-634-3920
Division and District Points of Contact		
LMVD	Clyde Redmon/LMVCO-R	601-634-5885
Memphis	Doug Gray/LMMCO-E	901-521-3461
New Orleans	Zain Terzi/LMNOD-R	504-865-2353
St. Louis	Robert S. Wilkins/LMSOD-R	314-263-5667
Vicksburg	B. J. Woods/LMKOD-M	601-634-5300
MRD	Donald Dunwoody/MRDCO-R	402-221-7284
Kansas City	Michael Carey/MRKOD-R	816-374-5758
Omaha	Blaine Cunningham/MROOP-R	402-221-4127
NAD	Charles Stone/NADPL-R	212-264-7814
Baltimore	Theodore Schaefer/NABOP-PO	301-962-3693
New York	Simeon Hook/NANPL-E	212-264-4662
Norfolk	Karl Kuhlmann/NAOPL-R	804-441-3766
Philadelphia	Jeffrey Radley/NAPEN-E	215-597-4833
NCD	Dale Raven/NCDCO-MO	312-353-7762
Buffalo	James Bennett/NCBPD-ER	716-876-2190
Chicago	Gerald Greener/NCCCO-O	312-353-6431
Detroit	Esther Fordree/NCECO-O	313-226-6809
Rock Island	George Hardison/NCROD-R	309-788-6332
St. Paul	James Holleran/NCSPD-ER	612-725-7574
NED	Lawrence Blake/NEDVE	617-894-2504
NPD	John Tyger/NPDPL-ER	503-221-3829
Portland	Dick Webster/NPPOP-RM	503-221-6070
Seattle	Doug Bailey/NPSOP-PO	206-764-3440
Walla Walla	Jim Brown/NPWOP-RM	509-525-5632
ORD	Sherman R. Gee/ORDCO-R	513-684-3191
Huntington	Michael White/ORHOP-R	304-529-5607
Louisville	Dave French/ORLPD-E	502-582-5774
Nashville	Ron Rains/ORNOP-R	615-251-5115
Pittsburgh	Pete Colangelo/ORPOP-R	412-644-4190
SAD	Gerald Purvis/SADCO-R	404-221-6746
Charleston	John Carothers/SACEN-E	803-724-4258
Jacksonville	Larry Taylor/SAJCO-OR	904-791-2215
Mobile	Kearney Windham/SAMOP-R	205-694-3720
Savannah	David Wahus/SASPD-E	912-944-5325
Wilmington	David Grimsley/SAWCO-R	919-343-4826
SPD	James D. Sears/SPDPD-R	415-556-8775
Los Angeles	Ruth Chase/SPLPD-E	213-688-5418
Sacramento	Fred Kindel/SPKED	916-440-3120
San Francisco	Robin Mooney/SPNPE-TE	415-974-5370
SWD	Mark King/SWDCO-R	214-767-2435
Albuquerque	Andrew Rosenau/SWACO-OR	505-766-1387
Fort Worth	Dwight Quarles/SWFOD-M	817-334-4642
Galveston	Ernie Wittig/SWGED	713-766-3011
Little Rock	Dale Leggett/SWLCO-L	501-378-5673
Tulsa	Van Thornton/SWTOD-R	918-581-7340

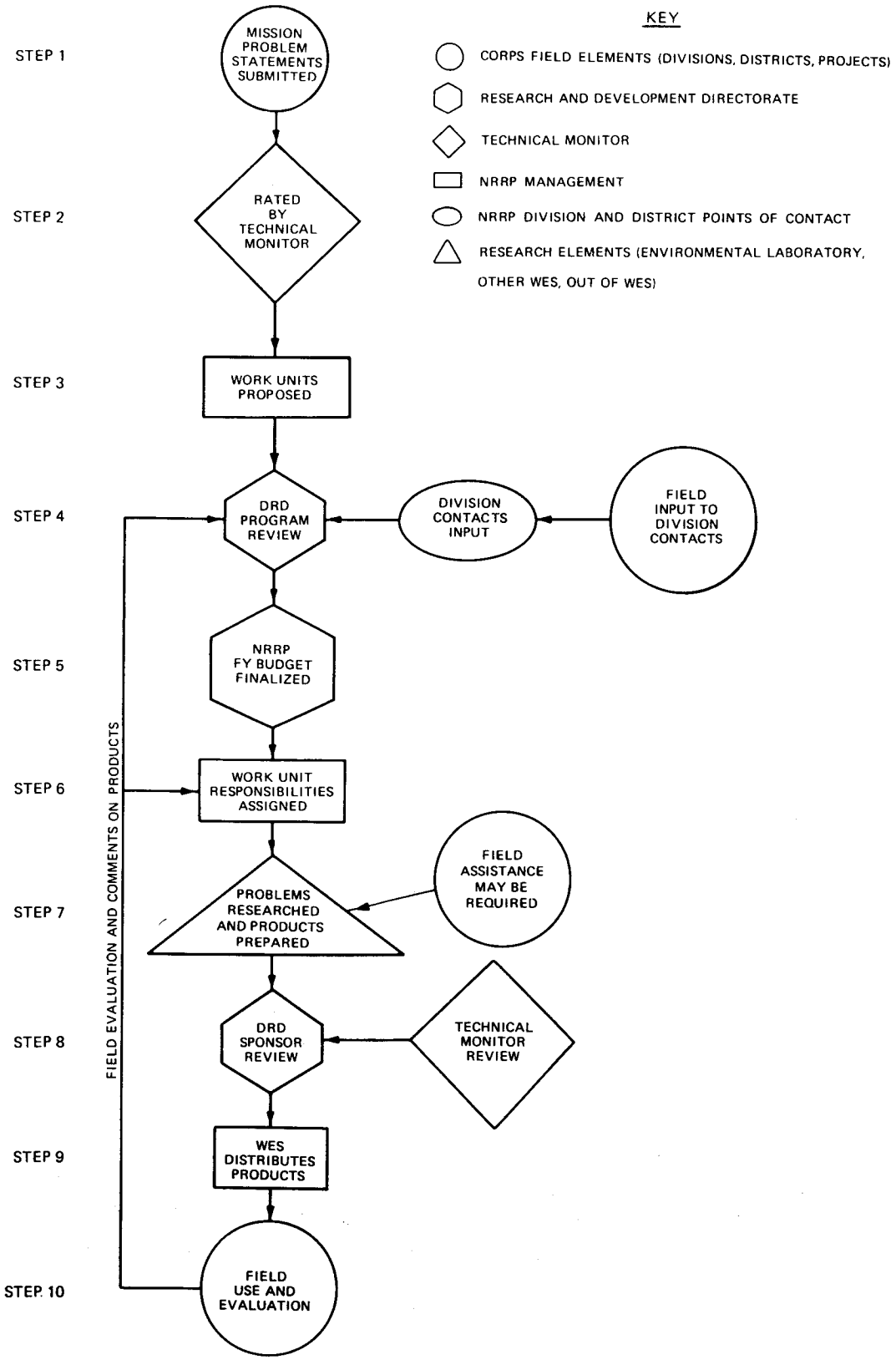


Figure 1. Natural Resources Research Program Work Unit Process.

in determining recommended priorities. After discussing all work units, the Technical Monitor determines the final work unit priorities for the upcoming FY.

Step 5: NRRP FY Budget Established

The Directorate of Research and Development in coordination with Civil Works Directorate establishes the FY research budget.

Step 6: Work Unit Assignments

Now that new work units and funding have been approved, research can begin to solve the field's problem. Many options are available for carrying out the actual research.

In WES—Work can be carried out by one of the four Divisions of the Environmental Laboratory or by one of the four other WES Laboratories.

Out of WES—Research activities may also be performed by other Corps laboratories, other government agencies, universities, or private contractors.

Step 7: Research Performed

Table 2 identifies the NRRP FY 84 work units by title and Principal Investigator. The Principal Investigator is responsible for performing the research and preparing NRRP user products. A typical work unit takes anywhere from three to five years to complete. Principal Investigators always seek field input or assistance during accomplishment of a work unit. Appropriate Division and District Points of Contact are contacted when NRRP research activities take place in their respective Division or District. The types of research activities that may occur at projects include the collection of data and field demonstrations. The Program Manager provides frequent progress reports to the DRD and the Technical Monitor to ensure the research is on schedule and is addressing the mission problem. Types of user products that can be prepared during a work unit are listed below.

Instruction Reports (IR)—Reports that outline or propose techniques and/or procedures for accomplishing a particular task. Examples: "Recreation Carrying Capacity Handbook," IR R-80-1, and "A Guide to Cultural and Environmental Interpretation in the US Army Corps of Engineers," IR R-81-1.

Technical Reports (TR)—Reports containing methodology of research investigations. When warranted, a summary of a technical report is published in lieu of the full technical report. Examples: "Recreation Carrying Capacity Design and Management Study," TR R-80-1, and "Alternative Approaches to Operating and Maintaining Recreation Areas," TR R-83-1.

Table 2
Natural Resources Research Program FY 84 Work Units

Work Unit	Principal Investigator	Environmental Laboratory
1. Recreation Research and Demonstration System		
Task I—Research and Demonstration Units	Janet Akers Fritschen (601-634-2866)	Environmental Resources Division (ERD)
Task III—Measuring Key Indicators for Evaluating Impacts and Trends	Michael Waring (601-634-2290)	ERD
2. Cost Efficiency of Operating and Maintaining Corps Recreation Areas		
Task II—Economy of Scale in Recreation Development	Larry Lawrence (601-634-2778)	ERD
Task III—Methodologies for Increasing O&M Efficiencies	Janet Akers Fritschen (601-634-2866)	ERD
3. Low-Cost Vegetation Control and Management on Corps Recreation Areas	Howard Westerdahl (601-634-3860) Steve Shetron (601-634-3772)	Ecosystem Research and Simulation Division ERD
4. Economic Impacts and Benefits of Corps Recreation Development	William Hansen (601-634-3724)	ERD

Miscellaneous Papers (MP)—Reports of investigations that are usually shorter than TRs and are less technical. Examples: "Summary of the 1981 Campground Receipt Study," MP R-81-3, and "Impact of the Energy Crisis on the Corps of Engineers Recreation Program," MP R-81-2.

Letter Reports—Reports that are brief and concise and pertain to one segment of on-going research. Letter reports are designed to quickly provide useful information to users prior to inclusion in a WES report published at a later date. Examples: "Effect of Use Fees and Controlled Access on Visitor Safety and Security" and "A Workshop on the Application of Microcomputers to Park and Natural Resource Management."

Draft Engineering Circulars and Engineering Manuals—Formal procedural manuals and reports that are printed and distributed by OCE.

Video Tapes/Slide-Tape Presentations—Designed to produce overview of planning, design, or management concepts or procedures. Example: Recreation Carrying Capacity Slide/Tape Overview.

Step 8: Sponsor Review

A draft product resulting from a work unit is submitted to the Directorate of Research and Development for review.

Step 9: Product Distribution

After sponsor review, the product is returned to NRRP management; sponsor review comments are addressed; and the document is printed and distributed.

Step 10: Field Use and Evaluation

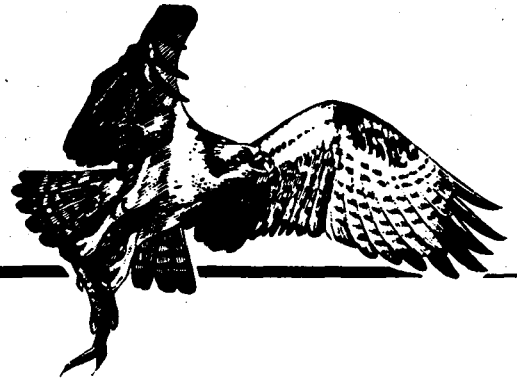
Products support the Districts and projects in the performance of their duties. Any comments concerning a product should be forwarded to NRRP management for consideration in improving future products. NRRP management is interested in learning of any product applications the field has had in order to evaluate the total effectiveness of the product. ***Feedback from you, the user of NRRP products, is extremely important to ensure that the NRRP is providing user-oriented products.***

Should you need assistance with a problem that is related to completed research, a one-step service is available. Information on one-step R&D Service is contained in EC 70-1-12 (30 August 1983).

Wildlife Resource Notes

Wildlife Resource Notes (WRN) is a new Corps information exchange bulletin designed to stimulate an informal dialogue among natural resources planning and management personnel within the U.S. Army Corps of Engineers. The bulletin is a contribution of the Environmental Impact Research Program sponsored by the Office, Chief of Engineers. The Environmental Laboratory of the Waterways Experiment Station is responsible for preparing the bulletin and editing field input.

WRN will be issued quarterly or on an irregular basis depending on the availability of suitable articles; three issues were printed in 1983. Articles were published on a variety of topics such as raptor management in the North Pacific Division; offset rental as a habitat management tool in the Tulsa District; management of riparian habitat for recreation, wildlife, and fisheries in the Sacramento District; a bluebird nest box program at Arkabutla Lake in the Vicksburg District; pre-impoundment environmental studies of new projects in the Fort Worth District; and nesting of ospreys and bald eagles at several Corps reservoirs. Summaries were also provided of workshops, symposia, and current research activities pertinent to Corps projects.



Articles for WRN are encouraged from all Corps offices and other agencies and organizations involved in natural resource planning or management. Contributions may range from single paragraph notes and comments to feature articles several pages long. Address correspondence to the Environmental Laboratory (ATTN: Chester O. Martin), U.S. Army Engineer Waterways Experiment Station, P.O. Box 631, Vicksburg, MS 39180, or call 601/634-3958 (FTS 542-3958).

Use of plant-growth regulators can minimize maintenance cost at Corps recreational areas

PLANT-GROWTH REGULATORS FOR LOW-COST VEGETATION MANAGEMENT

Howard E. Westerdahl
Ecosystem Research and Simulation Division, EL

Chemical alternatives may be cost effective for reducing or replacing mechanical and hand mowing requirements. Periodic mowing does not remove undesired grassy vegetation and woody shrubs, whereas use of selective chemicals could provide this capability. Chemical alternatives to mowing that have the most potential for achieving long-term control of selected vegetation and woody shrubs include plant-growth regulators.

The plant-growth regulators available and under development by industry will cause plant-growth inhibition. Release of the active ingredient from the formulation is not regulated. Some plant-growth regulators have been found to be capable of seedhead suppression, which aids in weed control and reduction of weed competition. These properties have resulted in the development of plant-growth regulators as a means of reducing mowing frequency and associated labor costs and as selected herbicides that reduce the ability of one plant to grow where another remains aggressive.

A major problem with plant-growth regulators is, in fact, the result of their success as inhibitors. The timing of application and the possible variability of plant-growth inhibition could be regulated by incorporation of plant-growth regulators into controlled-release carrier systems.

A controlled-release formulation is a combination of a biologically active component and a carrier that are structurally arranged to permit delivery of the active component to the target plant at a prescribed or controlled rate over a specific period of time (i.e., a few days to a year).

Concepts of controlled release are somewhat new, and applications to nonpharmaceutical areas are just now emerging. The concepts developed within the Corps' Aquatic Plant Control Research Program are applicable and will be evaluated for terrestrial applications using selected plant-growth regulators.

EDITORS NOTE: Vegetation management at Corps projects is a time-consuming, labor-intensive, expensive activity that is complicated by landscape features such as open areas, steep slopes, rocky terrain, and forested areas. A new NRRP work unit is designed to provide low-cost methods for vegetation control and management. This article describes one of two approaches to this problem. A future issue of RECNOTES will contain an article discussing options for low-maintenance vegetation strategies.

Plant-growth regulators may be a cost-effective alternative in reducing mechanical or hand-mowing activities at certain areas

The following are the objectives of the ongoing research:

- Evaluate the use of plant-growth regulators for minimizing mechanical mowing.
- Develop and evaluate controlled-release formulations of plant-growth regulators.
- Demonstrate the use of plant-growth regulators.
- Provide guidance on the appropriate use and limitations of recommended formulations.

Plant-growth regulators showing significant potential for use in controlled-release systems will be evaluated in small-plot field tests. Also, Corps District Offices will be surveyed in FY 1984 for candidate project sites where maintenance costs of vegetation is high as a result of area, terrain, and frequency of mowing. District cooperation in identifying potential test sites will greatly facilitate initiation of field testing and permit site selection representative of a variety of Corps problems and environmental factors.

In FY 1985 and 1986, field and laboratory testing of conventional and controlled-release growth regulators will be initiated. Efficacy of the formulations on the target species will be assessed.

In FY 1987, a synthesis report summarizing research results will be prepared. This report will include guidance on the use of conventional and controlled-release growth regulators to minimize vegetation maintenance cost in and around Corps recreational areas and earthen dams. In addition, throughout this work unit, interim reports will be prepared and distributed to Corps elements.

NATURAL RESOURCES RESEARCH PROGRAM FY 85 Program Review

Scheduled for 1 May 1984 at

Pulaski Building Washington, D.C.

Call A. J. Anderson (601-634-3657) for additional information.

RECENT PUBLICATION

Colihan, Alston, *A Guide to Managing Recreational Boating Areas*, U.S. Department of Transportation, United States Coast Guard Headquarters, Office of Boating, Public, and Consumer Affairs, Washington D.C. 20593. Copies are available through National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, Virginia 22151. When ordering, use the NTIS order number AD-A131-922/7. 35 pages.

This guide is intended to be used by anyone managing a recreational boating area, especially those persons working at the state and local level. Traffic patterns, time zoning, activity zoning, warning/information systems, and access limitation are discussed and illustrated. Guidelines and steps for developing and implementing a management plan are presented and discussed.

NATURAL RESOURCES RESEARCH PROGRAM

This bulletin is published in accordance with AR 310-2. It has been prepared and distributed as one of the information dissemination functions of the Environmental Laboratory of the Waterways Experiment Station. It is primarily intended to be a forum whereby information pertaining to and resulting from the Corps of Engineers' nationwide Natural Resources Research Program can be rapidly and widely disseminated to OCE and Division, District, and project offices as well as to other Federal agencies concerned with outdoor recreation. Local reproduction is authorized to satisfy additional requirements. Contributions of notes, news, reviews, or any other types of information are solicited from all sources and will be considered for publication as long as they are relevant to the theme of the Natural Resources Research Program, i.e., to improve the effectiveness and efficiency of the Corps in managing the natural resources while providing recreation opportunities at its water resources development projects. This bulletin will be issued on an irregular basis as dictated by the quantity and importance of information to be disseminated. Communications are welcomed and should be addressed to the Environmental Laboratory, ATTN: A. J. Anderson, U.S. Army Engineer Waterways Experiment Station, P.O. Box 631, Vicksburg, Mississippi 39180, or call AC 601, 634-3657 (FTS 542-3657).

TILFORD C. CREEL
Colonel, Corps of Engineers
Commander and Director